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VARIABLE DENTITION IN A CHINESE
INSECTIVORE

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In a collection of Chinese mammals mainly obtained for Field Museum in Szechwan, China, by Floyd T. Smith, there is a large series of the small, shrew-like insectivore first described by Milne-Edwards as *Uropsilus soricipes*. In this series, numbering 165 skins and 115 skulls, there is remarkable uniformity in the skins and skulls, but great variation in the dentition. The majority agree in the number and arrangement of their teeth with the original description of Milne-Edwards, and may be safely assigned to *Uropsilus*. Others have the dentitions for which the generic names *Rhynchonax* and *Nasillus* have been proposed (see Thomas, Proc. Zool. Soc. London, pp. 129-132, 1912); and still others combine in their dentition the characters of two of these supposed genera. In two cases all three genera (by definition) are found at the same exact localities, namely, Luan Shih Go and Lu Ting Shan, about halfway between Mouping and Tatsienlu, Szechwan.

It is somewhat doubtful, therefore, whether or not the presence or absence of certain teeth in this animal should be taken as criteria of generic distinction. Since there are no external nor cranial characters correlated with the differences in dentition, and since there appears to be no geographic segregation, it would be more reasonable, perhaps, to assume that here we have a form in which reduction of teeth is now in progress. If only one tooth were concerned, such an interpretation might readily find favor, but in this case there are three, or perhaps four, teeth involved. Any one of these may or may not be present, thus giving rise to any of several combinations. In the upper jaw, the third premolar is stated to be present in *Rhynchonax* and *Nasillus* but absent in *Uropsilus*. In the series of 115 skulls, this tooth is present in 15, absent in 99, and there is one skull in which it is present on one side and absent on the other. It is a

small tooth, in some cases inside the toothrow, quite peg-like and crownless; in others it is somewhat larger, almost equal in transverse diameter to the first premolar (next but one preceding it), and it may sometimes have a slightly developed crown. That it is unstable is fairly evident.

In the lower jaw there are two teeth of variable occurrence. These, according to the interpretation of Thomas, are the third incisor and the third premolar, the incisor when present being very minute and crowded inside the toothrow between the base of the terminal or second incisor and the next following tooth or canine. The third lower premolar, when present, is rather tightly wedged between the well-developed second and fourth premolars, but is small in size. It is a fairly well-formed tooth, with an obvious crown, nevertheless, and no specimens so far examined show it in vestigial condition. When it is absent, the space between the second and fourth premolars is completely closed.

A pair of minute third incisors occurs in only three of the 115 skulls under review, in all of which there is no third lower premolar; so the total number of teeth is not affected. On the other hand, there are 12 specimens in which the third lower premolar is present, and 102 in which it is not. In the entire series there is no specimen in which both the third lower incisor and the third lower premolar are present.

The dental formulas of the three supposed genera, as interpreted by Thomas, are as follows:

Uropsilus —I. $\frac{1}{2} \frac{2}{2} \frac{0}{0}$; C. $\frac{1}{1}$; Pm. $\frac{1}{2} \frac{2}{2} \frac{0}{0} \frac{1}{1}$; M. $\frac{1}{2} \frac{2}{2} \frac{3}{3} = \frac{3}{3} \times 2 = 34$.

Rhynchonax—I. $\frac{1}{2} \frac{2}{2} \frac{3}{3}$; C. $\frac{1}{1}$; Pm. $\frac{1}{2} \frac{2}{2} \frac{3}{3} \frac{1}{1}$; M. $\frac{1}{2} \frac{2}{2} \frac{3}{3} = \frac{1}{1} \times 2 = 38$.

Nasillus —I. $\frac{1}{2} \frac{2}{2} \frac{0}{0}$; C. $\frac{1}{1}$; Pm. $\frac{1}{2} \frac{2}{2} \frac{3}{3} \frac{1}{1}$; M. $\frac{1}{2} \frac{2}{2} \frac{3}{3} = \frac{1}{1} \times 2 = 38$.

Expressed in the form of a key, these result as follows:

Teeth 34; third upper premolar absent. *Uropsilus*.

Teeth 38; third upper premolar present.

Third lower premolar present, but third lower incisor absent.

Nasillus.

Third lower premolar absent, but third lower incisor present.

Rhynchonax.

This is delightfully simple and sharply defined but, as indicated above, when large series are examined, it fails to satisfy. In making the divisions, Thomas apparently had but 1 specimen referable to *Nasillus*, 8 of *Rhynchonax*, and 3 of *Uropsilus*. It is, perhaps, unjustifiable to lump all three supposed genera together, but at least some consideration must be accorded the evident instability and

variability of certain teeth. The greatest instability appears in the third upper premolar and in the minute third (?) lower incisor. I would suggest, therefore, that the presence or absence of these teeth be regarded as fortuitous and without classificatory significance. If this be done, *Rhynchonax* would become a synonym of *Uropsilus*.

The third lower premolar seems to be of more importance, since it is present in fairly well-developed condition in a considerable number of specimens, since it has not been found in obviously vestigial condition, and since there is some evidence that its occurrence may be correlated with geographic distribution. Among the specimens at hand are six from the southwestern province of Yunnan, four representing the form described by G. M. Allen as *Rhynchonax a. atronates*, and two representing his *Rhynchonax a. nivatus*. There is also a single example from Kachin Province, Burma. In all of these the third premolar is uniformly present and, as noted by Allen, the third upper premolar is especially well developed. The tooth designated as p^2 by Allen apparently is the one called p^3 by Thomas, and the one called i^2 by Allen is the canine of Thomas. The tooth regarded as i_3 by Thomas evidently was not present in Allen's material, and since no milk teeth were available, various interpretations were possible.

The southern forms thus have the dentition of *Nasillus* and it is conceivable, therefore, that reduction of teeth has not yet begun in the south, that it is under way in west-central Szechwan, and that it is fully accomplished in *Uropsilus*, which is the northernmost form. If this should be the case, it is even possible that there is a gradation from the southern forms with the maximum number of teeth to the northern ones with the reduced number, and the characters of presence or absence of certain teeth may be found to behave, so to speak, not like generic nor even specific, but like subspecific characters. In other words, perhaps *Rhynchonax* is only a gradient between *Nasillus* and *Uropsilus*. Material from a wider range of localities than is at present available will be necessary before the case can be settled; meanwhile, present knowledge seems best expressed by the recognition of no more than two genera. These might be defined as follows:

Uropsilus.—Teeth 34–38 (usually 34); third upper premolar usually absent, occasionally present in vestigial form; third lower incisor usually absent, rarely present in minute size and crowded in position; third lower premolar usually absent, sometimes present.

Nasillus.—Teeth 38; third upper premolar present, of fair size and having a well-developed crown; third lower incisor usually (always?) absent; third lower premolar always present.

If this division of genera be made, there remains the question of species and this also is difficult, for characters are few and elusive. Practically no distinctions based on external characters are possible, for in a large series there are specimens in which the upper parts are scarcely lighter in color than the underparts, and others in which there is considerable contrast between upper and lower parts. There is some evidence of local variation in size, but how far this is trustworthy is doubtful, since considerable sex difference in size is probable and sex determinations of insectivores made by collectors in the field are mostly unreliable.

Uropsilus soricipes of Milne-Edwards occupies at least the greater part of northwestern Szechwan. Possibly *andersoni* from Mount Omei may represent a slightly larger eastern form which perhaps should be called *Uropsilus soricipes andersoni*. The small southern forms of Yunnan, doubtfully differentiated from each other, should perhaps be called *Nasillus gracilis atronates* and *Nasillus gracilis nivatus*.

Specimens having the typical dentition of *Uropsilus* have been examined from the following localities in Szechwan: Chou Su Goh, Dan Shih Goh, Gan Yang Goh, Hsiao Yang Chi, Luan Shih Goh, Lu Erh Cheh, and Pin Yang Goh. Specimens with the dentition ascribed to *Rhynchonax* are present from Luan Shih Goh and Lu Ting Shan, but other specimens from these localities show the dentition of *Uropsilus* or *Nasillus*. Specimens with the dentition of *Nasillus* are from two localities in Szechwan (Luan Shih Goh and Lu Ting Shan), from two in Yunnan (Likiang and Mucheng), and from one in Burma (Adong Valley, Kachin Province). It should be noted, again, that the preponderance of northern specimens is quite typical of *Uropsilus*. In those from a single locality (Dan Shih Goh) the dentition is quite uniform throughout a series of no less than 38 specimens.

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